Observations of the Variable Star T Centauri.

By Lieut.-Col. E. E. Markwick.

This star proves to be an interesting variable on account of the large range in variation, $4\frac{1}{2}$ magnitudes, and its comparatively short period. My observations, in continuation of those on p. 247, vol. v. *Journal B. A. Assoc.*, are as follows. They were usually made with a binocular magnifying five times, supplemented by a $2\frac{3}{4}$-inch refractor, power 28. The comparison star, for the brighter stages, was L 5649, which is 23′ S of the var., and rated $7^{m}\cdot0$ in the *Uranometria Argentina*. The difference in brightness was estimated in steps, or tenths of a magnitude.

1894.	m		m		m		m
Dec. 29	7·1	May 14	8·0	June 3	6·0	June 23	6 5
1895.							
Jan. 2	7·2	15	7·4	4	6 0	24	6·6
6	7·5	16	7·4	5	5 to $5\frac{1}{2}$	26	6·65
29	9	17	7·3	6	5 5	27	6 7
Apr. 19	9·25	19	7·3	8	5 3	29	6 8
20	9·6	20	7·25	10	5·5	30	6·7
21	9·75	21	7·2	11	6·25	July 1	6·8
22	9·75	22	7·2	12	6·2	2	6·8
25	10	25	7·05	13	6·3	3	6·8
26	10	26	7·0	14	6·2	8	7·1
May 3	9·7	28	6·8	16	6·0	11	7·5
5	9·6	30	6·25	17	6·25	12	7·75
6	9·3	31	6·25	19	6·27	13	7·75
7	9·22	June 1	6·25	20	6·3	14	7·75
8	8*	2	6 0	21	6·4	17	8·5
						21	9·5

I attach a drawing showing the light-curve in 1894 and 1895 as deduced from the previous and the 1894 observations.

Neither of these, it will be observed, gives a complete cycle of variation, and it is somewhat difficult to arrive at the period. In the above-quoted paper seventy-three days was thought to be something near the truth, and from the additional observations now obtained it would appear that this is so.

The star was observed $6^{m}\cdot25$ on 1894 May 26, but there was a gap in the observations of seventeen days prior to this, the next preceding observation being 8^{m} on May 9. Now an in-

* Very bright moonlight, making observation difficult.

spection of the 1895 curve shows the maximum to have occurred eight days prior to the secondary maximum indicated by the "hump" on the curve for June 16. Accordingly, taking eight days from 1894 June 2, the date of the secondary maximum or that year, we get 1894 May 25 as a fairly probable date of maximum. This is corroborated by the photographic magnitudes of the star communicated by Professor E. C. Pickering to *Astr. Nachr.* No. 3269, col. 72, which show it to be actually slightly rising on 1894 May 24. The last plate taken on that day shows it as brighter than on any other occasion, although twenty-three plates were taken on various dates in the years 1889–1894.

The maximum in 1895 may pretty safely be allocated from my observations to June 8.

From 1894 May 25 to 1895 June 8 is 379 days. Supposing five periods to have elapsed in the interim, we get (i) 75·8 days as mean period.

From the photographic magnitudes the star appears to have been at or near a minimum on 1893 July 27. My observations show a minimum pretty clearly on 1895 April 26. From the former to the latter is 638 days. Taking nine periods to have elapsed, this gives (ii) 70·9 days as mean period.

We now get from the mean of (i) and (ii) as approximate elements of maximum, epoch 1894 May 25 (Julian, 241, 2974) + 73·35 *d*. E. Variation, maximum 5·3 — 6·25 to minimum 10·0. Interval from minimum to next succeeding maximum forty-three days.

This will suit the observations of December 1894 and January 1895, supposing a faint maximum to have occurred about them.

With the above elements the photographic magnitudes of Pickering have been compared by plotting them on a typical light-curve. Those of 1894 agree fairly well. Those of 1893 do not, as they would appear to show the star's light to be falling when calculation makes it rising. In 1892 only one plate was taken. In 1891 and 1889 it is impossible to deduce any regular change. In 1890 the slight variation shown is fairly in agreement.

On the whole, seeing the short time the star has been under observation since its discovery, I can only regard these elements as provisional.

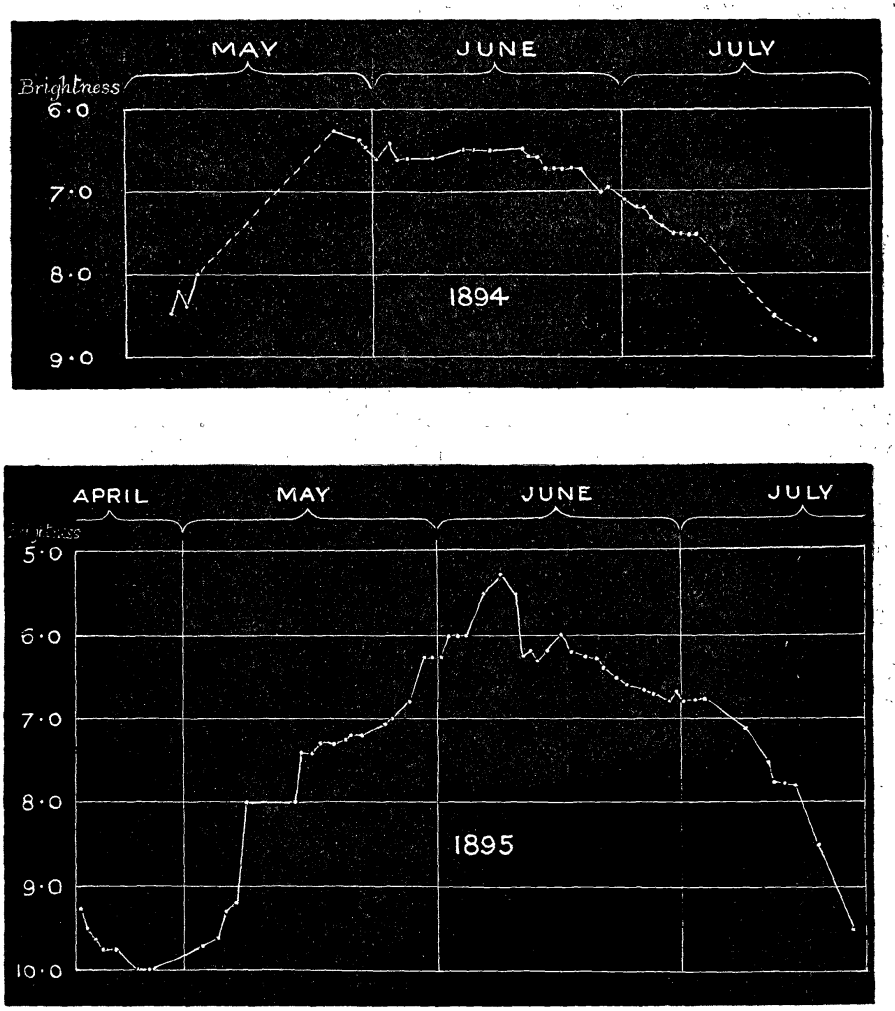
As noted in my paper in the *B. A. A. Journal*, it was observed by Lacaille (7^m) between June 16 and June 26, 1752. Say (*a*) June 21 as mean. It is No. 5738 of Yarnall, and rated $6^m{\cdot}0$. Observed at Washington in R.A. (*b*), 1862·80, and in declination (*c*), 1870·40. Supposing the star was at maximum on these three occasions, we have from

a to *b*	= 40,296 days
b to *c*	= 2,776 ,,
b to 1894 May 25	= 11,541 ,,

With a period of 73·35 days, the residuals are respectively 27 days, 11 days, and 25 days.

However, it is quite possible that there may be inequalities in the period which would throw out the maximum considerably when calculated for a lengthy period of years. Again, the star evidently varies very slowly about the time of maximum, so that the three ancient dates mentioned are merely approximate, so far as they are regarded as representing the maximum. These observations may therefore possibly be in accordance with the period named, supposing there are inequalities in it.

It is probable the brightness varies at different maxmia.



Light variations of *T Centauri.*

In the latitude of Gibraltar one can only observe it in ordinary working evening hours for a comparatively short time each year. A regular series of observations made in the southern hemisphere over a year or two would very soon throw much light

on the variation, and it is much to be desired that someone in the Cape or Australia will take it up.

The position of the star for 1906 is R.A. $13^h\ 36^m\ 2^s$, Decl. $-33°\ 5'.5$; No. 4896 in Chandler's List of New Variables supplementary to Cat. in No. 300 of the *Ast. Journal.* It is also No. 252 of *Centaurus* in the *Uran. Arg.*

On 1895 May 14 it was slightly orange in tint; May 15, in $2\frac{3}{4}$-inch refractor, various powers, 28 to 200, noted as slightly yellow. Generally speaking, towards maximum it appears yellowish with tinge of orange; and after maximum I think the orange tint is slightly more pronounced.

It may possibly be of the type of *S Vulpeculæ* or *R Sagittæ*, although the range of variation is greater.

Gibraltar: 1895 *October.*

Results of Filar Micrometer Comparisons of Saturn with 96 *Virginis, and of Ceres with Neighbouring Stars.* By John Tebbutt.

The accompanying table contains the results of comparisons with the filar-micrometer on the 8-inch equatorial. In the comparisons of *Saturn* the first and north, and second and south, limbs were observed alternately, and the differences of R.A. and N.P.D. for both planets have been corrected for refraction, and a small error in the perpendicularity of the micrometer threads. The semidiameter of *Saturn* and the parallaxes of both planets have been taken from the *Nautical Almanac*, and the resulting geocentric places have finally been compared with the ephemerides on page 262 of the almanac and page 4 of its appendix. The errors for *Saturn* differ but little from those determined by me in May last from comparisons with *κ Virginis* and already forwarded to the Society.